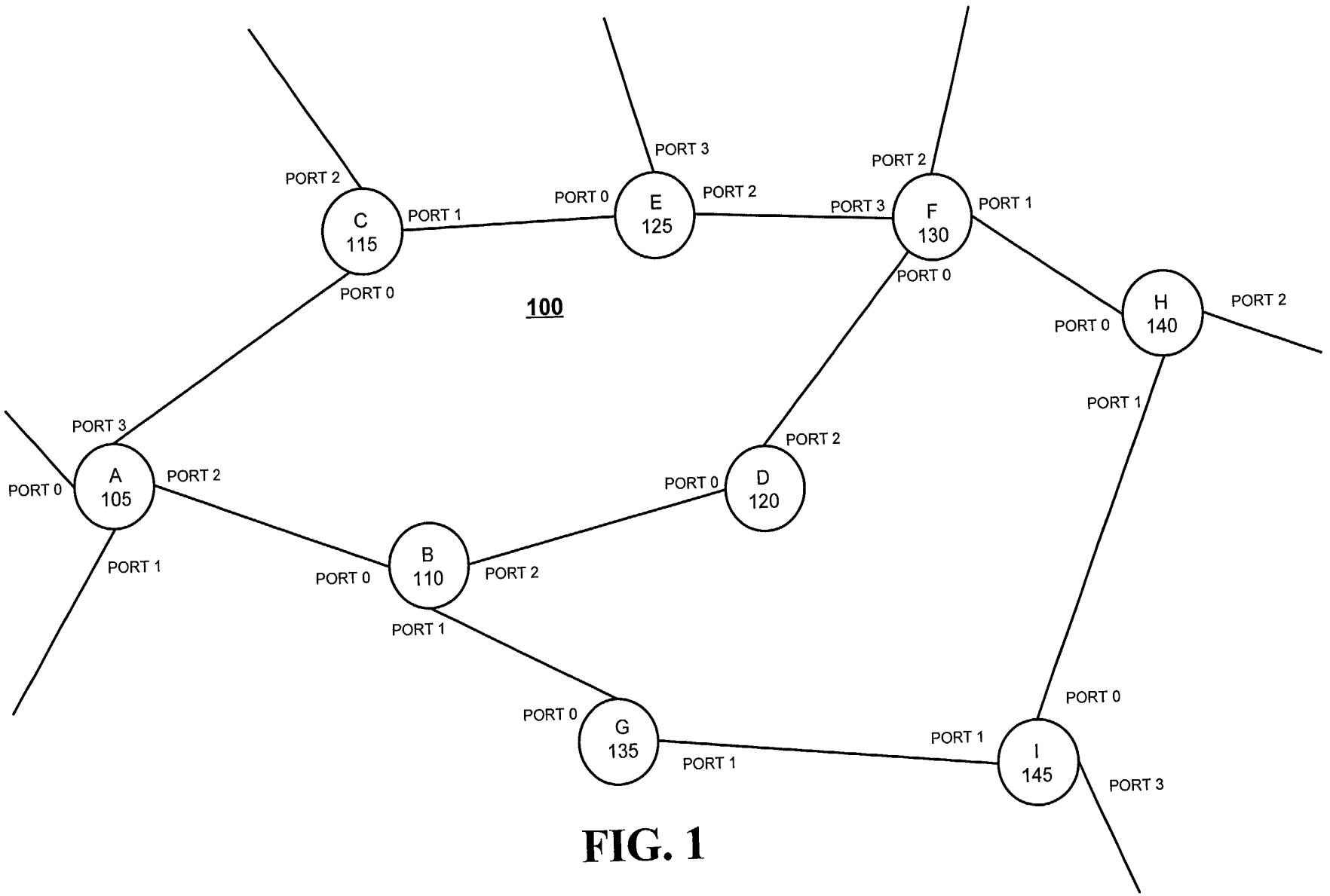
100
A
105
B
110
C
115
D
120
E
125
F
130
G
135
H
140
I
145
PORT 0
PORT 1
PORT 2
PORT 3

FIG. 1

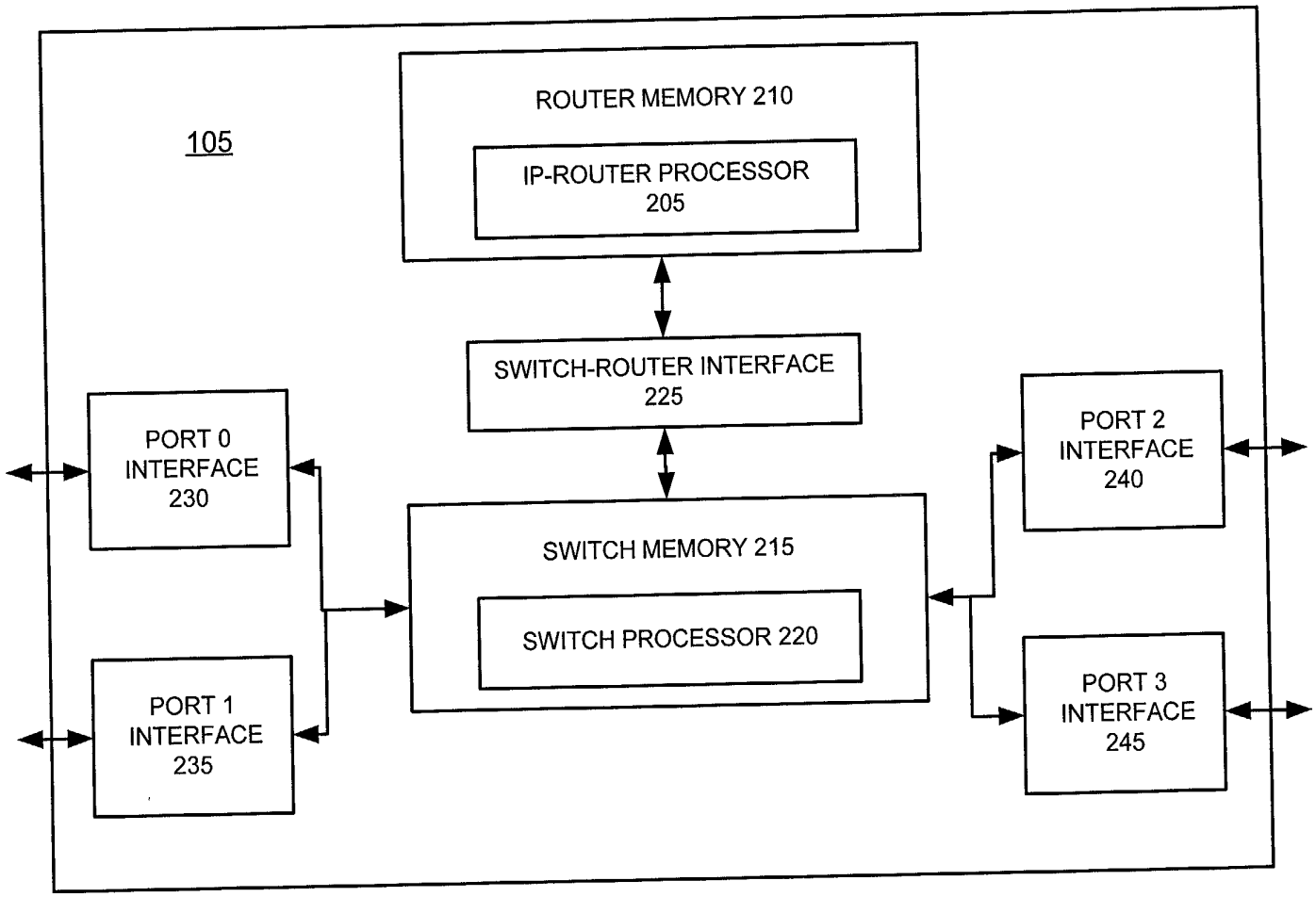
105
ROUTER MEMORY 210
IP-ROUTER PROCESSOR 205
SWITCH-ROUTER INTERFACE 225
PORT 0 INTERFACE 230
PORT 1 INTERFACE 235
SWITCH MEMORY 215
SWITCH PROCESSOR 220
PORT 2 INTERFACE 240
PORT 3 INTERFACE 245

FIG. 2

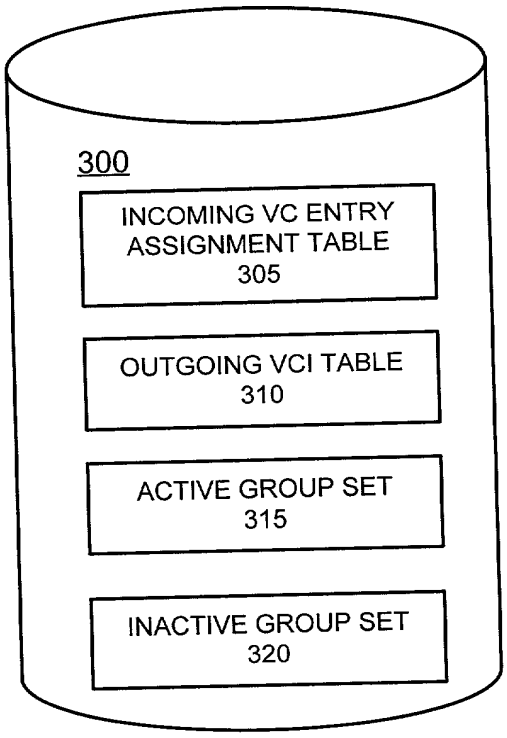
300
INCOMING VC ENTRY ASSIGNMENT TABLE 305
OUTGOING VCI TABLE 310
ACTIVE GROUP SET 315
INACTIVE GROUP SET 320

FIG. 3

SWITCH VC TABLE 400

VC ENTRY 405	ROUTER OUTPUT PORT (PN_{OUT}) 410	VCI_{out} 415	
1	***IP-ROUTER***	***IP #***	default
2	Port 2	48	VC link
3	Port 3	76	VC link
4	UNASSIGNED	0	not assigned
5	Port 3	113	VC link
6	***IP-ROUTER***	***IP #***	inactive dest

FIG. 4

305

INCOMING VC ENTRY ASSIGNMENT TABLE

DESTINATION ROUTER 505	DESTINATION STATUS 510	INPUT PORT (VC TABLE) # 515	ASSIGNED VC ENTRY 520	NEGOTIATION STATUS 525
R1	ACTIVE	0	68	ASSIGNMENT PROPOSED
R1	ACTIVE	1	27	READY
R1	OPEN PORT	2	0	NONE
R1	ACTIVE	3	104	READY
R2	INACTIVE	0	33	DROP PROPOSED
R2	INACTIVE	1	17	READY

FIG. 5

310

OUTGOING VCI TABLE

ENTRY	DESTINATION ROUTER 605	DESTINATION STATUS 610	OUTPUT PORT 615	NEIGHBOR'S VCI 620	NEGOTIATION STATUS 625
1	***ANY***	***NOT ACTIVE***	0	***1***	**DEFAULT**
2	***ANY***	***NOT ACTIVE***	1	***1***	**DEFAULT**
3	***ANY***	***NOT ACTIVE***	2	***1***	**DEFAULT**
4	***ANY***	***NOT ACTIVE***	3	***1***	**DEFAULT**
5	R1	ACTIVE	0	0	ASSIGNMENT REQUESTED
6	R1	ACTIVE	1	112	READY
7	R1	OPEN PORT	2	0	NONE
8	R1	ACTIVE	3	74	READY
9	R2	INACTIVE	0	89	ACK'ING DROP REQUEST
10	R2	INACTIVE	1	120	READY
11	R2	OPEN PORT	2	0	NONE
12	R2	INACTIVE	3	0	DROPPED
13	R4	ACTIVE	0	15	READY
14	R4	ACTIVE	1	77	READY

FIG. 6

700

IP FORWARDING TABLE

DESTINATION ROUTER 705	OUTGOING VCI TABLE ENTRY 710	TIME STAMP 715
R1	6	6:22:35
R3	14	6:22:35
R4	17	4:32:11
R8	22	6:22:35
R10	28	1:18:56

FIG. 7

800

FLOOD TAG PACKET

ROUTER # 805	ROUTER_NUM	
FLOOD TAG SEQ. # 810	SEQ_NUM	
ACTIVE LINKS 815	TO R1	TO R4
METRICS 820	M_1	M_2
LINK DATA RATE 825	*X* bps	*Y* bps
TAG-ACK SEQ. #S 830	NEIGHBOR-TAG SEQ_NUM # 835	
	FLOOD-TAG SEQ_NUM # 840	

FIG. 8

900
NEIGHBOR-TAG PACKET

ROUTER # 905	ROUTER_NUM	
NEIGHBOR TAG SEQ. # 910	SEQ_NUM	
LINKS 915	TO R1	TO R2
VCIs 920	68	33
DESTINATION STATUS 925	ACTIVE	IN-ACTIVE
NEGOTIATION STATUS 930	ASSIGNMENT PROPOSED	DROP PROP0SED
TAG-ACK SEQ. #S 935	NEIGHBOR-TAG SEQ_NUM # 940	
	FLOOD-TAG SEQ_NUM # 945	

FIG. 9

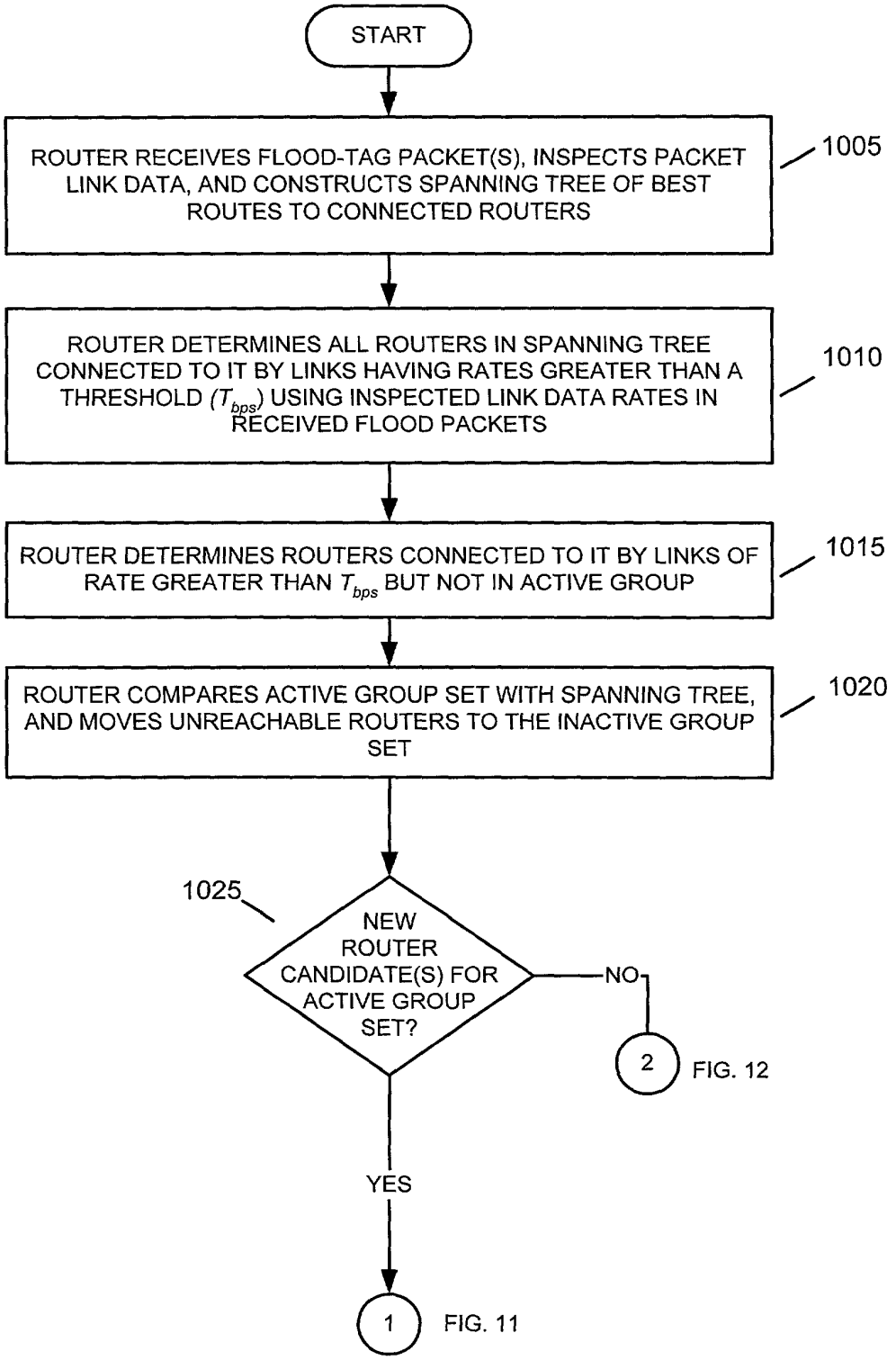
START
ROUTER RECEIVES FLOOD-TAG PACKET(S), INSPECTS PACKET LINK DATA, AND CONSTRUCTS SPANNING TREE OF BEST ROUTES TO CONNECTED ROUTERS
1005
ROUTER DETERMINES ALL ROUTERS IN SPANNING TREE CONNECTED TO IT BY LINKS HAVING RATES GREATER THAN A THRESHOLD (T_{bps}) USING INSPECTED LINK DATA RATES IN RECEIVED FLOOD PACKETS
1010
ROUTER DETERMINES ROUTERS CONNECTED TO IT BY LINKS OF RATE GREATER THAN T_{bps} BUT NOT IN ACTIVE GROUP
1015
ROUTER COMPARES ACTIVE GROUP SET WITH SPANNING TREE, AND MOVES UNREACHABLE ROUTERS TO THE INACTIVE GROUP SET
1020
1025
NEW ROUTER CANDIDATE(S) FOR ACTIVE GROUP SET?
NO
2
FIG. 12
YES
1
FIG. 11

FIG. 10

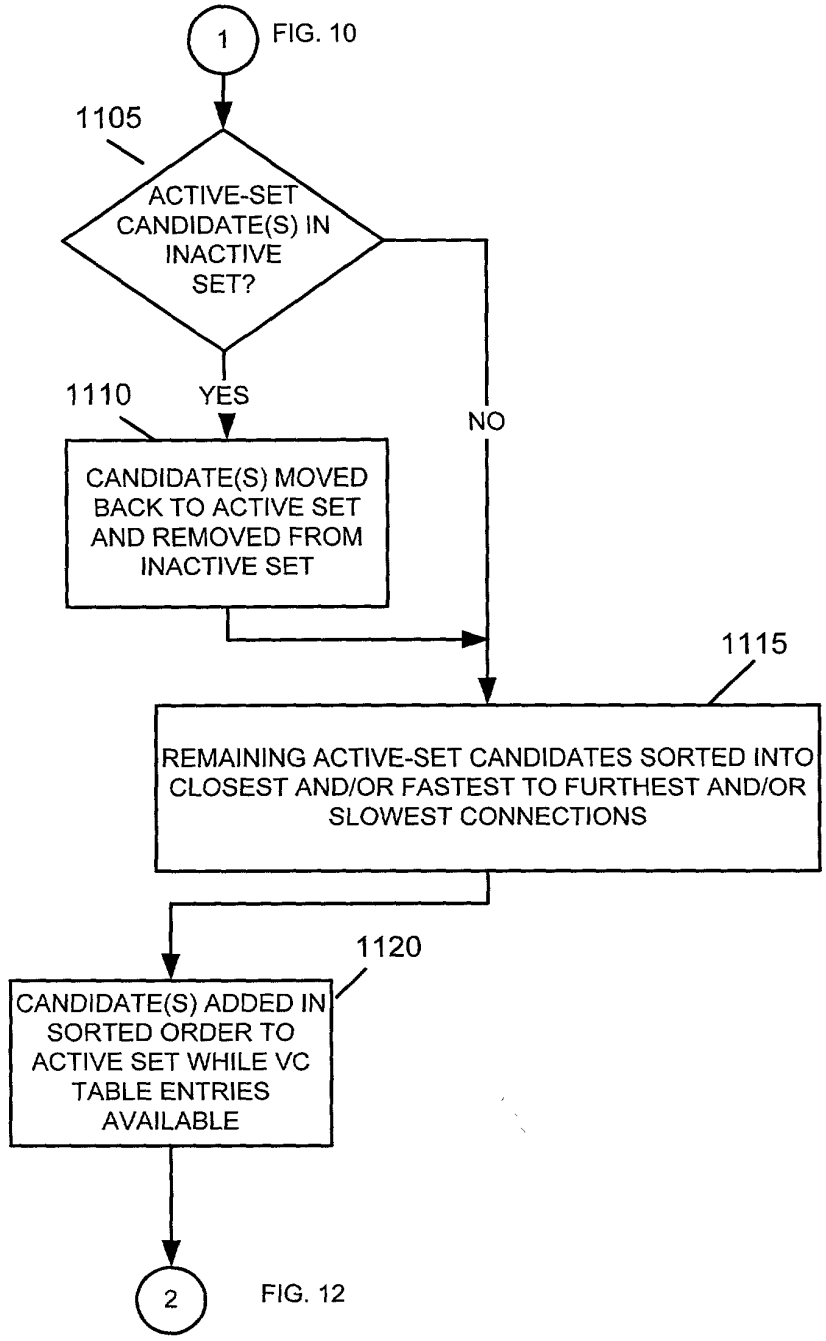
1
FIG. 10
1105
ACTIVE-SET CANDIDATE(S) IN INACTIVE SET?
YES
NO
1110
CANDIDATE(S) MOVED BACK TO ACTIVE SET AND REMOVED FROM INACTIVE SET
1115
REMAINING ACTIVE-SET CANDIDATES SORTED INTO CLOSEST AND/OR FASTEST TO FURTHEST AND/OR SLOWEST CONNECTIONS
1120
CANDIDATE(S) ADDED IN SORTED ORDER TO ACTIVE SET WHILE VC TABLE ENTRIES AVAILABLE
2
FIG. 12

FIG. 11

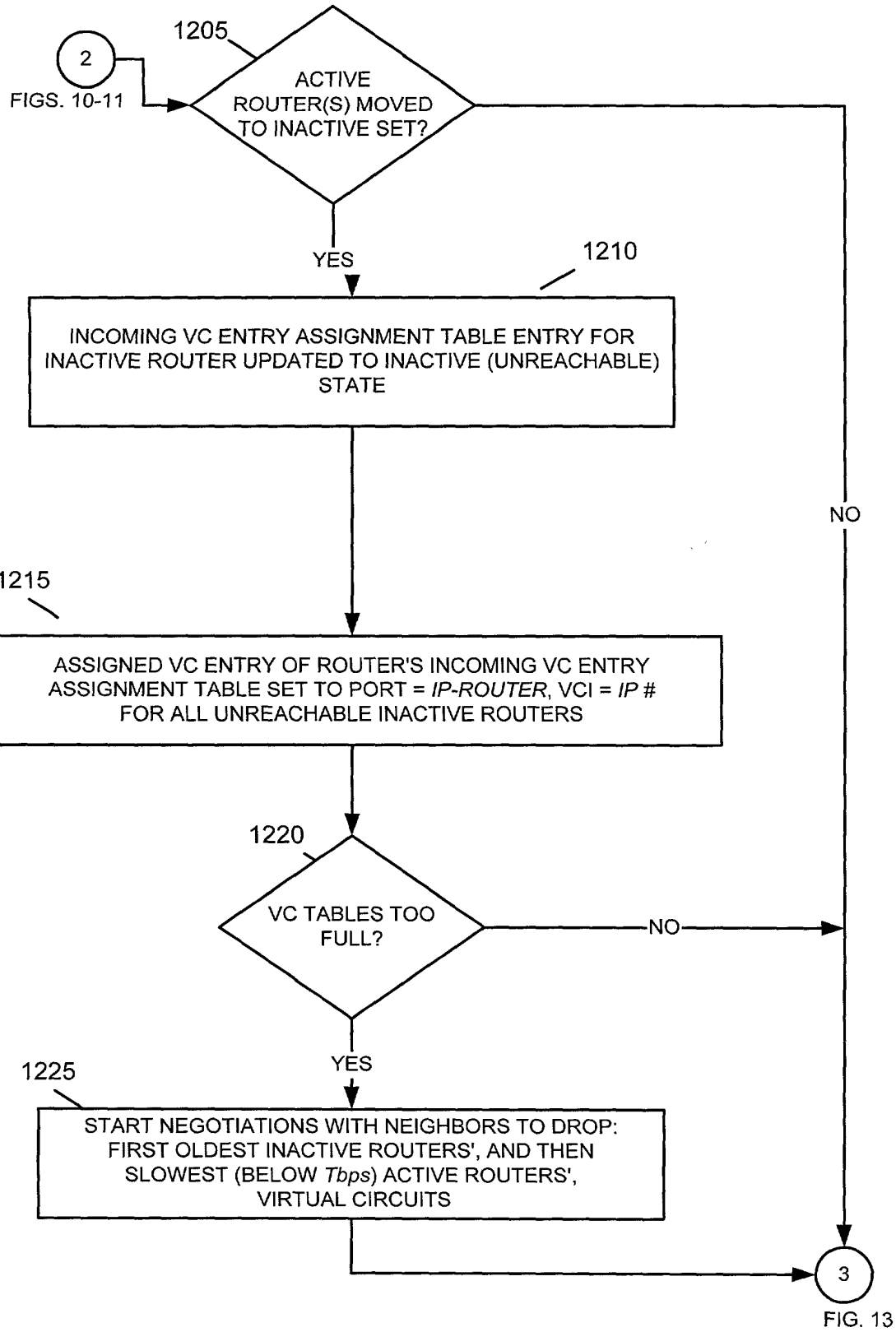
2
FIGS. 10-11
1205
ACTIVE ROUTER(S) MOVED TO INACTIVE SET?
YES
NO
1210
INCOMING VC ENTRY ASSIGNMENT TABLE ENTRY FOR INACTIVE ROUTER UPDATED TO INACTIVE (UNREACHABLE) STATE
1215
ASSIGNED VC ENTRY OF ROUTER'S INCOMING VC ENTRY ASSIGNMENT TABLE SET TO PORT = *IP-ROUTER*, VCI = *IP #* FOR ALL UNREACHABLE INACTIVE ROUTERS
1220
VC TABLES TOO FULL?
NO
YES
1225
START NEGOTIATIONS WITH NEIGHBORS TO DROP: FIRST OLDEST INACTIVE ROUTERS', AND THEN SLOWEST (BELOW *Tbps*) ACTIVE ROUTERS', VIRTUAL CIRCUITS
3
FIG. 13

FIG. 12

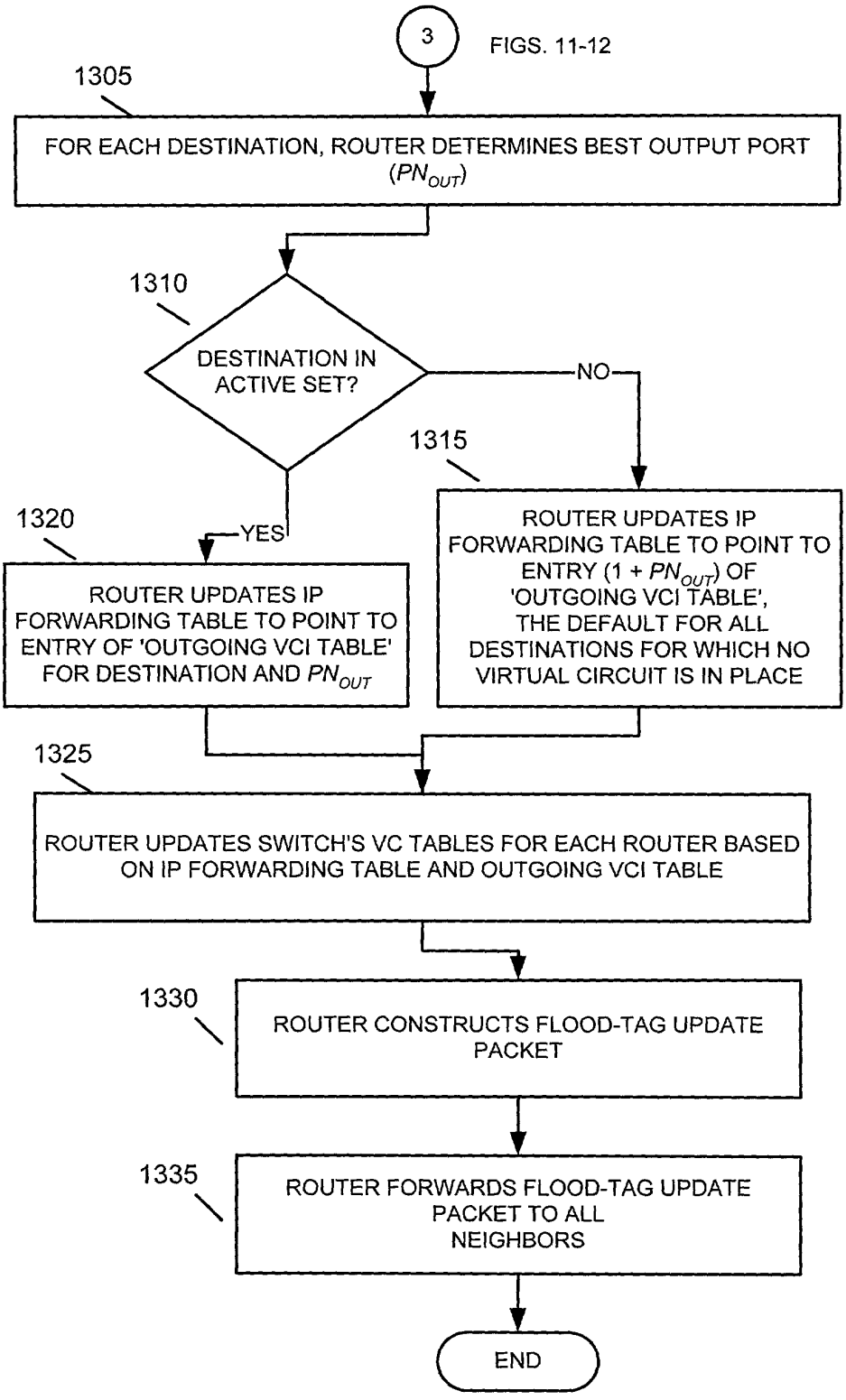
3
FIGS. 11-12
1305
FOR EACH DESTINATION, ROUTER DETERMINES BEST OUTPUT PORT (PN_{OUT})
1310
DESTINATION IN ACTIVE SET?
NO
YES
1315
ROUTER UPDATES IP FORWARDING TABLE TO POINT TO ENTRY (1 + PN_{OUT}) OF 'OUTGOING VCI TABLE', THE DEFAULT FOR ALL DESTINATIONS FOR WHICH NO VIRTUAL CIRCUIT IS IN PLACE
1320
ROUTER UPDATES IP FORWARDING TABLE TO POINT TO ENTRY OF 'OUTGOING VCI TABLE' FOR DESTINATION AND PN_{OUT}
1325
ROUTER UPDATES SWITCH'S VC TABLES FOR EACH ROUTER BASED ON IP FORWARDING TABLE AND OUTGOING VCI TABLE
1330
ROUTER CONSTRUCTS FLOOD-TAG UPDATE PACKET
1335
ROUTER FORWARDS FLOOD-TAG UPDATE PACKET TO ALL NEIGHBORS
END

FIG. 13

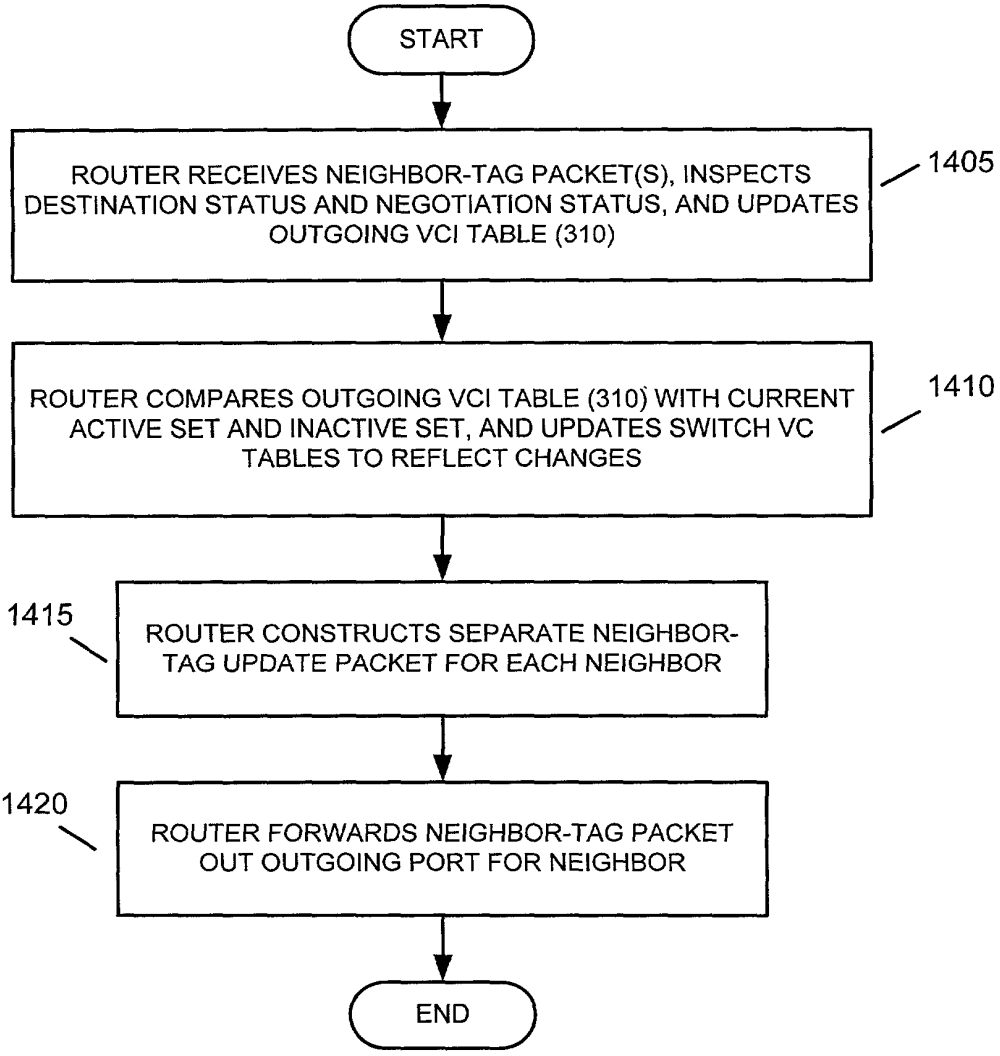
START
ROUTER RECEIVES NEIGHBOR-TAG PACKET(S), INSPECTS DESTINATION STATUS AND NEGOTIATION STATUS, AND UPDATES OUTGOING VCI TABLE (310)
1405
ROUTER COMPARES OUTGOING VCI TABLE (310) WITH CURRENT ACTIVE SET AND INACTIVE SET, AND UPDATES SWITCH VC TABLES TO REFLECT CHANGES
1410
1415
ROUTER CONSTRUCTS SEPARATE NEIGHBOR-TAG UPDATE PACKET FOR EACH NEIGHBOR
1420
ROUTER FORWARDS NEIGHBOR-TAG PACKET OUT OUTGOING PORT FOR NEIGHBOR
END

FIG. 14

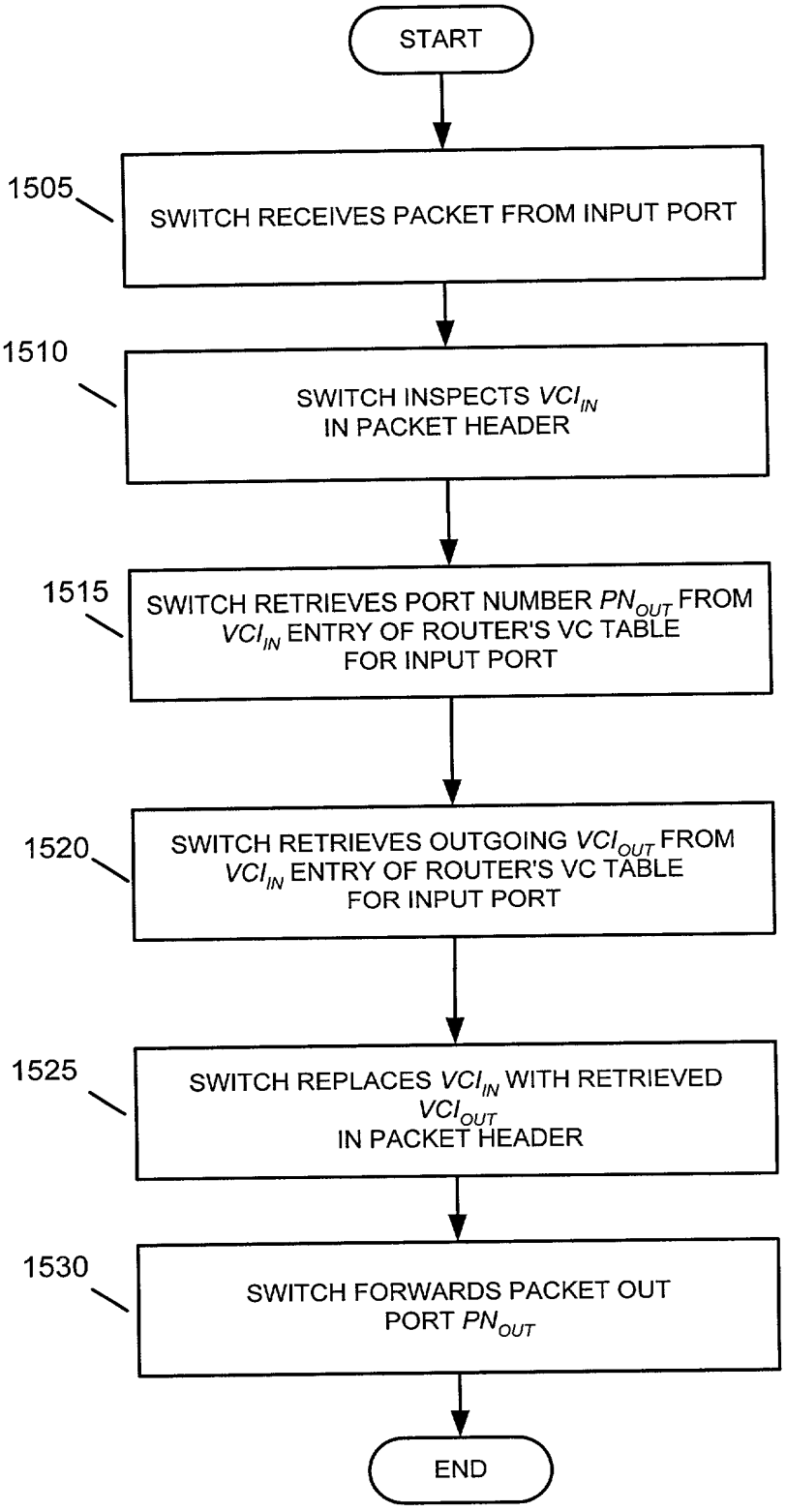
START
1505
SWITCH RECEIVES PACKET FROM INPUT PORT
1510
SWITCH INSPECTS VCI_{IN} IN PACKET HEADER
1515
SWITCH RETRIEVES PORT NUMBER PN_{OUT} FROM VCI_{IN} ENTRY OF ROUTER'S VC TABLE FOR INPUT PORT
1520
SWITCH RETRIEVES OUTGOING VCI_{OUT} FROM VCI_{IN} ENTRY OF ROUTER'S VC TABLE FOR INPUT PORT
1525
SWITCH REPLACES VCI_{IN} WITH RETRIEVED VCI_{OUT} IN PACKET HEADER
1530
SWITCH FORWARDS PACKET OUT PORT PN_{OUT}
END

FIG. 15